Space Weather Forecast

Issued on Monday, 25 July 2022 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Slight Chance of Moderate class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has remained low through the last 24 hours, with activity confined to peaks of mid common-class. These flares included one at 24/0724UTC, appearing to emanate from the vicinity of a now departed sunspot region on the northwestern solar horizon, which was concurrent with a southwest solar horizon 'prominence eruption' Coronal Mass Ejection (CME). This prominence eruption has been analysed and is not Earth-directed. Satellite imagery was otherwise dominated in the 24 hours by a large far-sided CME. Besides the large far-sided CME, there has been numerous faint CMEs seen in imagery during the past 24 hours, and these have been analysed and are considered not to be Earth-directed. However, a filament eruption (arc of plasma) occurred at 24/1837UTC in the southeast quadrant, although there is currently no evidence of a CME in available imagery. Therefore, no Earth-directed CMEs have been observed in available imagery. There are currently six sunspot regions on the visible disc, although all groups are unremarkable and all relatively stable, or have continued to fade during the period.

Solar Wind / Geomagnetic Activity: The solar wind was characteristic of the tail end of influence of the 21 July CME, possibly segueing into the earlier incumbent high speed stream from one of a pair of 'coronal holes'. The CME itself arrived at Earth prior to this 24-hour period, at 23/0258UTC.

The solar wind speed has been mostly elevated, between 500-550km/s, with a steady declining trend towards the end of the period, as CME effects wane. The magnetic field showed a relatively stable, with the all important north-south component (Bz) mostly weak, throughout the period. The net result of the above solar wind measures was for mostly Quiet geomagnetic conditions, with an provisional Unsettled interval (Kp3) observed in the 0000-0300UTC period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is likely to remain low, with a daily slight chance of moderate-class flares. Barring development, two further regions should leave the Earth-facing side of the Sun in the period, however the eastern solar hemisphere's far side is congested with the expected returning sunspot locations, such that activity ought to be maintained, pending proper analysis of any arrivals.

Solar Wind / Geomagnetic Activity: The 21 July CME is now largely thought to have passed. At present, no further Earth-bound CMEs feature in the forecast.

The current high speed stream should wane in earnest to start the coming UTC working week.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Met Office Space Weather Forecast

Quiet conditions should predominate from day two, Tuesday 26th July. However, by day 4 (Thursday 28th July) conditions may become Unsettled as Earth possibly connects with a small coronal hole, although this carries low confidence.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2022. All Rights Reserved.